



*The*  
**HIP AND KNEE**  
**- SURGEONS -**

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PATIENT INFORMATION

**KNEE REPLACEMENT**

## TOTAL KNEE REPLACEMENT : PATIENT INFORMATION

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Total knee replacements have enhanced the quality of life of millions of people by providing significant relief from pain and improvement in function.

This leaflet has been compiled to help you to prepare yourself for surgery, understand the procedure and the risks involved, the rehabilitation and the long-term precautions. It will assist you in knowing what to expect during your stay in hospital as well as answer some of the more commonly asked questions.

A joint is formed where two or more bones meet. The bone ends are covered with a smooth, shiny tissue called cartilage. This protects the bones from excessive force or pressure, and allows them to move easily without pain. The joint itself is enclosed in a capsule that has a viscous liquid called synovial fluid, which helps to reduce friction and wear of the joint. Ligaments connect the bones to one another, serving to keep the bones together and stabilize the joint. Crossing the joint are muscles and tendons which enable the joint to move. They also assist the ligaments in providing stability to the joint.

### **The Knee Joint**

The knee joint operates like a hinge. It also has a slight ability to move from side to side and to rotate. It is formed where the lower end of the thigh bone (femur) meets the upper end of the shin bone (tibia). The femur has two sections at its end that fits into the saucer-like shape at the top of the tibia. It is a much shallower joint than the hip joint. The front of the knee is protected by the knee cap, which is held in place by muscles, tendons and ligaments.

The word arthritis means joint inflammation. Arthritis results if any part of a joint becomes diseased – the lining, the joint fluid, the joint surface or the bones themselves. Direct injury to the joint or over-use can also cause arthritis. A physical defect in the joint, which has been present since birth, could also lead to arthritis.

### **Arthritis of the Knee Joint**

Arthritis of the knee occurs when the cartilage that covers the lower end of the femur and the upper end of the tibia starts wearing away thus exposing the bare bone underneath. When this happens the joint becomes pitted, eroded and uneven, resulting in pain, stiffness and instability. This may result in a limp and limited range of movement. The affected leg may look shortened and there may be muscle wasting which will cause the one leg to look thinner than the other.





An X-ray of an arthritic knee joint

## **Osteoarthritis**

Osteoarthritis is the most common form of arthritis in the Western World. It can be found in all weight-bearing joints such as the spine, hips and knees and usually occurs over the age of 50 but can occur at any age, depending on predisposing factors. It is usually caused by wear and tear as a result of every day activities or sporting activities, but may occur earlier as a result of an injury, fractures or childhood abnormalities. Some experts believe that there may be a genetic predisposition in people who develop osteoarthritis of the knee joint.

In osteoarthritis the joint cartilage becomes worn and roughened and eventually the bone becomes exposed. Some joints may become enlarged and swollen and develop bony spurs called osteophytes. The first symptom is pain, usually when weight bearing, and it can refer further down the leg. The pain can also be experienced at night. People often compensate by limping.

Osteoarthritis can be treated with non-steroidal anti-inflammatories, analgesics and gentle exercise and modification of activities, but when the pain interferes excessively with daily activities surgery can be considered.

## **Rheumatoid Arthritis**

Unlike osteoarthritis, which is a wear and tear phenomenon, rheumatoid arthritis is a chronic inflammatory disease, which affects mainly the joints but can have systemic effects on the body as well. In rheumatoid arthritis, when the synovial lining of the joint becomes inflamed and painful, the joint releases chemical substances that attack and gradually destroy the cartilaginous surfaces of the bone. This disease process leads to severe, and at times rapid degeneration of multiple



joints, resulting in severe pain and loss of function. The exact cause of rheumatoid arthritis is unknown, some experts believing that a virus or bacteria may trigger the disease in people who have a genetic predisposition while others believe it may be an autoimmune disease in which the synovial tissue is attacked by the immune system.

The signs and symptoms of rheumatoid arthritis are similar to osteoarthritis in that there is painful swelling and loss of motion. However in rheumatoid arthritis there is seldom only one joint affected – usually multiple joints are involved including the small joints of the hands. The systemic symptoms include loss of appetite, fever, energy loss, anaemia, and rheumatoid nodules.

Rheumatologists using different medications, which will help to reduce the pain and slow down the process of degeneration, can treat rheumatoid arthritis.

### **Treatment options**

Most people can be managed conservatively, i.e. with medication, physiotherapy and modification of the activities that cause pain. However if the joint pain or disability cannot be controlled conservatively there may be a need for surgery. Your orthopaedic surgeon will consider the impact of your condition on your social, domestic and professional life and whether it threatens your independence.

There are two objectives for having surgery, namely to:

- reduce pain; and
- improve function.

The purpose of your new joint is to relieve stiffness and pain and so improve your walking and ultimately your quality of life.

The artificial joint has a limited life span, the length of which will depend on how well you protect the knee from stressful activities. With sensible use, the chance your joint will last more than 10 years is over 95 percent. If the components do loosen, they can be replaced in what is called a revision operation. This is more complicated surgery and usually isn't as successful as the first total knee replacement procedure.

### **When is total knee replacement considered?**

The most common reason to replace a knee is arthritis, resulting in pain, stiffness, deformity or instability which interferes with a person's lifestyle and cannot be controlled by more conservative measures such as medication or using a cane.

A normal knee joint has smooth cartilage surfaces, which glide across one another with almost no friction. In an arthritic knee the joint surfaces are rough and irregular, causing pain as the two uneven surfaces grind across one another.



In a knee replacement operation, the rough surfaces are replaced with smooth components. Most patients who have artificial knee are over 55 years of age, but the operation is occasionally performed on younger persons.

Although circumstances vary, patients are generally considered for total knee replacement if:

- the pain is severe enough to restrict not only work and recreation, but also the activities of daily living;
- the pain is not relieved by anti-inflammatory or arthritis medicine or the use of a cane, and restriction of activities;
- there is significant stiffness of the knee; or
- X-rays show advanced arthritis or other problems.

### **What is a Total Knee Replacement?**

A total knee replacement is a surgical procedure designed to replace the worn surfaces of a damaged knee. The knee is replaced by an artificial prosthesis. This consists of metal or linings attached to the tibia and femur and separated by a polyethelene insert. The metal liners are usually attached to the bone using special bone cement. Very occasionally the kneecap also needs resurfacing with a polyethelene insert – the need for this is assessed by your surgeon during the procedure.



Two examples of total knee replacement prosthesis.

## **Possible Complications**

There is a risk of developing complications during or after *any* surgical procedure. The complication rate following total knee replacement is low and special precautions are taken to prevent these from occurring.

Anaesthetic complications can occur as well as surgical complications- the latter depend on the quality of the bone and muscle.

Other possible complications include problems with wound healing and infection. There is a high risk of blood clots forming but the compression stockings and sequential pumps that are applied to your legs help to prevent this. Of importance is early mobilisation after the operation.

Please see our procedure specific consent forms for a thorough breakdown of potential complications.

## **Preparation for Surgery**

Each patient is assessed on an individual basis. There are two main reasons for surgery - to reduce pain and to improve function. Once the decision has been made that you require knee replacement then the following procedures take place:

To ensure that you are fit for surgery you will be required to consult a physician for a full medical examination.

The following tests may be done prior to seeing the physician:

Blood tests  
Chest x-ray

The following tests are usually done by the physician:

ECG (electrocardiogram)  
Lung function test

If you wish to interact with the physiotherapist before your operation, you can set up an appointment either at your home or at the physiotherapy practice by phone. The post-operative procedure can then be explained to you and you will be given advice with regard to the precautions whilst moving, and the adjustments that need to be made in your home. Research has demonstrated that those patients who see a physiotherapist pre-operatively have a reduced length of stay in hospital and are less anxious.

The physiotherapist is able to assess the height of your bed at home, and a good chair of a reasonable height to sit on. This is important because initially deep flexion of the knee is difficult post-operatively. The physiotherapist will show you how to get in and out of bed, get up and sit down from a chair, and how to get in and out of a car. Crutch walking and stair climbing is practised as well, so that when



you get up for the first time on day one post-operatively these movements are familiar to you. The physiotherapist will also assess your shower and the ease with which you can get in and out of it, as well as the position of your toilet. You will be able to practice those things that prove to be most difficult.

It helps if the person who will be caring for you once you return home is present at the pre-operative consultation so that he or she is familiar with contra-indications and is aware of when you will need assistance e.g. you will require assistance with washing and drying your feet and putting your stockings or socks on.

Please complete a pre-admission form for the hospital which needs to be handed in a few days prior to admission. This can be done at hospital reception. You will also need to see the pre-admission sister at this time.

You will be admitted either the day before surgery or on the day of surgery, depending on the time of your operation. You should stop eating and drinking at least six hours before surgery. You will be required to wash with special soap which we will supply prior to coming in to hospital if you are admitted on the same day as your procedure.

You will be admitted by the nursing staff and visited by your anaesthetist. You will be measured for compression stockings that are worn to prevent a deep vein thrombosis.

### **What to bring to hospital**

- All your usual chronic medication in its original packaging so that it can be dispensed by the nursing staff while you are in hospital.
- A nightie or pyjamas- if possible the nightie should only be knee length.
- Slippers that have rubber soles and a back, or slip-on shoes also with an enclosed back.
- Dressing gowns should only be knee length.
- Toiletries should include body cream that the staff can use to rub your back when doing pressure care.
- Shower gel as picking up dropped soap can be difficult after your knee surgery.
- You can include shampoo if required because you will be able to shower before being discharged.
- Crutches can be brought with you or can be hired from Medlend on the eighth floor of the Claremont Hospital.

### **The day of surgery**

#### **Before surgery**

The morning of your surgery you will need to shower with antiseptic soap.



A nurse will ensure you are prepared for theatre. You will be given a theatre gown to wear. Your leg will be painted with special antiseptic solution and wrapped in a green theatre sheet. You will be asked to put items you might need in high care in a toiletry bag and this will be marked with your name and accompany you with all your notes from the ward.

The anaesthetist will visit you to explain the protocol that will be followed in theatre prior to your operation and pre-assess you to ensure that it is safe for you to have the anaesthetic. They may prescribe a tablet, which will help you to relax.

Your family will be allowed to see you on the day of the operation before going to theatre if they wish.

You will be taken to theatre on your bed accompanied by a staff member, where you will be handed over to the theatre sister who will take care of you until you have recovered sufficiently to leave the theatre complex.

### **During surgery**

Depending on your general health, the anaesthetist will decide whether you will be given a general, epidural or spinal anaesthetic. The operation is performed in a special ultra-clean theatre.

In routine cases, the surgery lasts about one and a half hours.

During the surgery and immediately afterwards you will be given antibiotics to prevent infection occurring in the new joint. You may or may not require a blood transfusion. You will remain in the theatre recovery room for a period of close observation.

### **After Surgery**

A ward staff member will transfer you from theatre to high care as a normal precaution and for extra pain control. You may remain in this area for 12 to 24 hours until you are ready to be moved back to the orthopaedic ward. Once you awaken you may find-

A mask for oxygen.

A drip - this replaces the fluids that may have been lost during the operation.

A cuff around your arm. This records your blood pressure.

A drain - there may be a tube next to the incision site that drains any excessive blood or fluid within the tissues. It helps the wound to heal more quickly by reducing the amount of bruising.

After the operation you will lie flat on your back with your leg flat on the bed. You will limit movement of the operated leg for the first 24 hours to avoid undue stress on



the new joint, however gentle controlled movement as instructed by your physiotherapist is important.

Sequential pumps - these will be placed around the calf muscles to promote better circulation of the lower limbs while in bed.

You must assist the nursing staff to move in bed by using the unoperated limbs. In particular lifting your buttocks off the bed is important for relieving pressure and the use of bedpans initially. You are allowed to sit upright in bed for meals.

Your family can visit you in high care at specified times. Only two visitors may visit at a time.

### **Rehabilitation after knee replacement surgery**

It is essential for you to exercise your knee daily after your surgery for at least six months to restore your knee to its optimum function. Walking alone is not sufficient. It is essential that you co-operate fully with the therapists right from the start of your treatment.

### **Bed Exercises**

You will be instructed by your physiotherapist how to perform exercises. These consist of:

Breathing exercises and coughing to keep your chest clear and to prevent chest complications

Leg exercises for both legs to:

- minimize the risk of blood clot formation
- strengthen muscle groups
- increase the range of motion of the operated leg
- prepare the operated leg for walking

The leg exercises are particularly important because the leg muscles on the operated side will be weak and painful and it is important to gain range of motion and power as soon as possible so that the leg can be used in as normal a pattern as possible for walking and other functional activities.

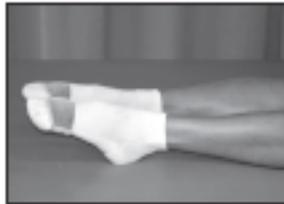
On the morning after the operation, a physiotherapist will come to see you in the High Care Unit. She will treat your chest by rolling you into alternate side lying and instruct you in deep breathing exercises whilst shaking and percussing your chest. This is done to loosen any secretions and to encourage full expansion into the base of the lungs.



### **Ankle exercises:**

Pull feet up and push down

Repeat 10 times every hour



### **Thigh exercises (quadriceps)**

Straighten your knee by tightening your front thigh muscle (quadriceps)

Pull toes towards you at the same time.

Hold for a count of 5. Relax.

Repeat 10 times.



### **Hip and knee bending:**

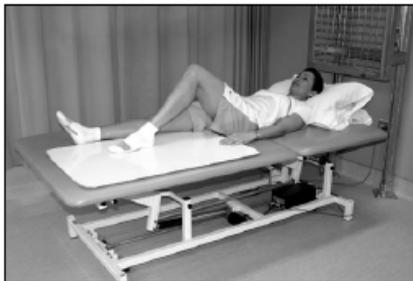
Lie on your back.

Gently bend hip and knee upwards keeping heel on bed.

Bend your knee as much as possible and then slowly straighten.

Keep the small of your back pressed into the bed.

Repeat 10 times.



## **Walking with crutches**

At first you will be assisted into sitting on the edge of the bed. You will then walk as far as you are able with crutches or a walking frame and the assistance of the physiotherapist.

Your walking pattern is as follows:

Crutches first

Then place the operated leg between the crutches.

Walk through with the other leg, pushing down hard on your hands to take the weight off your operated leg.

It is preferable that women wear a shorter nightie and dressing gown so that there is no risk of tripping over longer attire. Footwear should be "slip on" with backs and non-slip soles.

If you have had bilateral knee replacements, you will begin walking with a walking frame and progress to crutches when you are coping well on the frame.

Both crutches will be used for the first three weeks after your operation. After 3 weeks you may walk with one crutch. Start by using one crutch for short distances at home and gradually progress. Always use the crutch on the opposite side as your operated leg. Example: Right knee operation, the crutch will be held in your left hand.

## **Thigh exercises (quadriceps)**

Place a thick towel under thigh. Pull your toes towards you;  
Lift your heel off the bed until the knee is absolutely straight.  
Your thigh should remain resting on the towel.  
Repeat 10 times.



### **Straight leg raise**

Lie on the your back with the unoperated leg bent so that the foot rests on the bed.

Straighten your knee. Lift your leg just off the bed

Attempting to lift the heel before the thigh lifts up.

Slowly lower the leg back to the bed.

Repeat 10 times.



### **Sitting, bend and straighten the knee**

Sit on the edge of the bed, bend your knee as far back as possible

Relax

Repeat 10 times.

Lift the lower leg until the knee is absolutely straight.

Lower and relax.

Repeat 10 times.



### **Lying on stomach, bend leg**

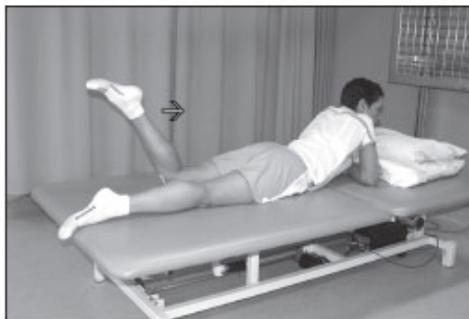
Lie on stomach with both legs straight.

Bend the knee of the operated leg as far as you can.

Do not lift front of hips off bed

Repeat 10 times.

Repeat the above using the un-operated leg to assist the operated leg to bend further.



### **Knee extension Stretch**

Place the heel of your operated leg on a small roll.

Press your operated knee down toward the bed using your front thigh muscles.

Place your hands above the knee (as shown) and press down to help maximize the hamstring stretch behind your knee.

Do not bounce with your hand, rather hold the stretch.



Your walking will be progressed first with regard to distance.

Once the length of the hospital passage can be managed on crutches, you will be taught to negotiate stairs.



### **To move from sitting to standing**

Sit on a solid chair with arm rests. Before standing up place the operated leg forwards and the unoperated leg back under the chair. Push down on both hands to assist when standing up, taking most of your body weight through your unoperated leg. When standing, draw the operated leg back so that you are standing up straight, then reach for your crutches.

### **Sitting down**

When sitting down, back up to the chair with your unoperated leg placed back against the chair and the operated leg placed forwards. Put your crutches down. Reach behind you and place your hands on the arm of the chair, to assist you with lowering into the chair. Allow the operated leg to slide forwards as you sit down.

### **Exercises to improve your knee bend**

Sitting on a chair slide your heel under the seat to bend your operated knee as far as possible

Cross the non-operated ankle over the operated ankle and use it to help bend the operated knee.

With your operated knee bent and your foot planted on the floor slide your buttocks forward in the chair to help bend your knee and feel the stretch.



## Stairs

You will be taught to negotiate stairs by your physiotherapist before discharge. BOTH CRUTCHES will be used for 6 weeks after the operation when going up or down stairs. You may walk with one crutch after 3 weeks but you must use both crutches when negotiating stairs.

### ASCENDING

- First - unoperated leg
- Second - operated leg
- Third - crutches

### DESCENDING

- First - crutches
- Second - operated leg
- Third- unoperated leg

*Just remember – good leg goes to heaven, bad leg goes to hell....*



### **Lunging in standing position(calf and hamstring stretch)**

Hold onto railing at steps. Place foot of operated leg on the bottom step, with the heel just over the edge of the step.

Lunge forward putting weight through the forward foot and feel the stretch in the back of the calf and the knee.

Then place your heel on the step with your toes up against the next step. Straighten your knee as far as possible.

Repeat 3 times.



### **Standing quadriceps stretch**

Hold onto rail

Hip in neutral position. Bend operated knee behind you, bringing your heel towards your buttocks. Feel the stretch in the front of your thigh.

Repeat 3 times.

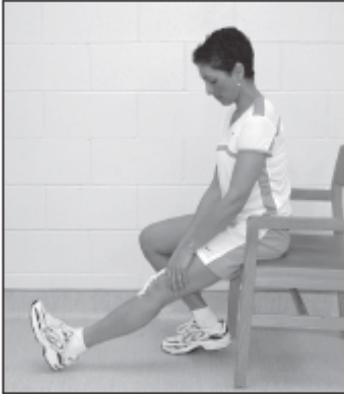


**Exercises to improve your terminal extension.**

Stretch the operated leg out with the heel on the floor or another chair.

Push down with your hands above the knee to straighten your knee as much as possible

No restriction on weight applied.

**Use of heat and ice**

When using heat or ice, remember not to get your incision wet before your staples are removed.

**Ice**

Ice may be used during your hospital stay and at home to help reduce the pain and swelling in your knee. Pain and swelling will slow your progress with your exercises. A bag of crushed ice may be placed in a towel over your knee for 15 to 20 minutes. Your sensation may be decreased after surgery, so use extra care.

**Heat**

If your knee is not swollen, hot or painful, you may use heat before exercising to assist with improving the range of motion. A moist heating pad or warm damp towels may be used for 15 to 20 minutes. Your sensation may be decreased after surgery, so use extra care not to burn your leg.



## **DO'S**

Do walk as much as you are comfortable doing, but aim to increase gradually the distance walked every day.

Do consult your surgeon before commencing sport.

Do use an ice pack around the knee for comfort on the advice of your physio.

## **DON'TS**

Do not drive for 4 weeks or as your surgeon directs

Do not lift heavy weights until you consult your surgeon.

## **Helpful hints on discharge**

Go for short essential walks - do not take long walks for exercise

Use two crutches for up to 3 weeks after the operation. You may then progress to one crutch, but it must be held in the opposite hand to your "new" knee.

Start cycling as soon as your flexion angle allows it (approximately 100 degrees).

You may walk and exercise in water once the wound has healed- usually two to three weeks post operatively.

Your physiotherapist will increase the exercises that you should be practicing at 10 days, and again at 3-4 weeks post-operatively.

## **Medication**

You will be sent home with prescribed medication to prevent blood clots. Your doctor will determine whether you should take aspirin or Xarelto until 14 days after surgery. If injections are necessary, your doctor will discuss it with you, and the nursing staff will teach you or a family member how to administer these.

You will be sent home with prescribed medication to control pain. Plan to take your pain medication 30 minutes before exercising. Preventing pain is easier than chasing pain. If pain control continues to be a problem, call your doctor.

## **Incision**

Your stitches or staples will be removed on day 14 or after.

You should not take a tub bath until your stitches or staples are removed, but may shower if your dressing has been waterproofed.



## **Follow-up appointments**

You will have a wound check after 2 weeks. Thereafter a six-week follow-up appointment will be made for you to see your surgeon, who will then evaluate your progress.

## **Precautions for the rest of your life**

If you develop an infection in any part of your body, the germs may spread through the bloodstream and infect your artificial joint. Please consult your home doctor immediately if you develop any of the following infections, so that antibiotics can be prescribed: tooth abscess or extraction, boils, infected cuts and sores, bladder infections. If you should undergo any other operation, you must inform your doctor that you have an artificial knee so that appropriate antibiotics can be given to you.

All sports put more stress on your artificial knee than normal walking, but recreational sports such as golf, bowls or exercise bikes are relatively safe. Avoid contact and high impact sports. Please consult your surgeon before you embark on an exercise programme.

Being overweight places abnormal stress on your joint. Always guard against this as it can reduce the lifespan of your new joint.

## **Conclusion**

As you start using your new knee you should see continued improvement in your strength and endurance for up to a year after surgery. Total knee replacement is rated as one of the most successful orthopaedic procedures and should enable you to return to your work and cope normally with activities of daily living. Remember to keep your follow-up appointments.

*Walk tall and enjoy your new knee....*



## Frequently asked questions

*Will I have a lot of pain after surgery and, if so, what will be done to relieve it?*

You will have pain following the surgery, but this will be relieved initially by the spinal anaesthetic or a local nerve block and later by strong pain killing injections into your drip. After some time this will be changed to tablets, and we recommend that you take these regularly for a couple of days.

*Will I still experience pain after discharge?*

Yes, you may experience pain occasionally as well as stiffness for some time after your surgery, as the muscles heal and your body adapts to the new joint.

*Will I be able to shower once I am home?*

Yes, you can shower but may need assistance with washing and drying your feet as well as putting on and taking off your stockings. Your dressing will be waterproofed so that showering is possible.

*Is swelling of my knee and ankles normal after surgery?*

Yes, to a degree. You can expect some swelling for a few months after surgery. This may be worse at the end of the day. However the swelling should have reduced by the morning or after you have been lying down. If it does not go down or there is pain associated with the swelling you should contact your surgeon immediately.

*Will I need additional physiotherapy after my discharge?*

This will depend on how much you are able to bend your knee and on your range of movements. You will be given an exercise programme to follow and you need to do this twice a day. This, together with regular walking, will be sufficient until your follow-up visit. It is advisable to see the physio at least at 14 days and 6 weeks. These appointments can be scheduled for the same day as you see your surgeon for follow-up.

*How do I know if I am exercising too much or too little?*

Let your body guide you. If you find that you are stiff one day, you have probably overdone it the day before. Just cut back and build up again slowly on your existing exercises but do not add any extra exercises.

*How do I know if I am doing well or not?*

There is no such thing as doing badly. Everyone works at their own pace and achieves goals in their own time. Never feel that you are progressing slower than someone else. There are no set time frames to achieve goals and if you work hard you will get there.

*Can I go out in the first six weeks or should I stay at home?*

There is no reason why you cannot go out. You will probably find that you are quite tired the first couple of weeks after discharge and don't really feel like going too far afield.



*Is it normal to feel tired and washed out after my discharge?*

Yes, don't forget that you have had a big operation and that your body needs time and rest to recover. Take things easy and structure your daily activities. Also try and rest on your bed after lunch, mainly so that your legs are raised as this will help reduce swelling.

*When can I start driving?*

Every patient is different. Usually patients are able to drive at about 4-6 weeks. It is vital that you are able to perform an emergency stop without hesitating due to your knee. Left knee replacements using automatic vehicles can often drive sooner.

*Who do I contact if I have any problems or queries?*

The team is always available to assist you if you have queries or problems. You are welcome to contact us at any time.





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